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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,371	10/15/2003	Bill Kamps	040079-000210US	9268
25231	7590	02/11/2005	EXAMINER	
MARSH, FISCHMANN & BREYFOGLE LLP 3151 SOUTH VAUGHN WAY SUITE 411 AURORA, CO 80014			TAYLOR, VICTOR J	
			ART UNIT	PAPER NUMBER
			2863	

DATE MAILED: 02/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/687,371

Applicant(s)

KAMPS, BILL

Examiner

Victor J. Taylor

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 20-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 20-39 is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 6 is/are rejected.
- 7) ☒ Claim(s) 3-5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Office Action.

DETAILED ACTION

Drawings

1. The corrected drawings were received on March 08, 2004. These drawings are approved.

Specification

2. The disclosure is objected to because of the following informalities:

- I. The use of the term "amorphous" and "amorphous hardware" as found in the specification and in the drawing and in the claims is objected to as being shapeless hardware. Definitions for the wording of "amorphous" as found in the dictionary define this term as meaning "lacking definite form" or of "no particular type" or as "lacking organization and formless" or "lacking the "distinct crystalline structure"". The applicant defines the term for "amorphous hardware element" as a group of configurable hardware structures that can be defined to perform a particular function or as a field programmable gate assembly FPGA or some portion thereof or of using multiple FPGA'S and defines the re-configuration of the gate hardware structures to provide the multiple functions in paragraph 0036 on page 10.

For example, well know in the digital computer arts are hard-wired "OR" and "AND" and "NAND" gates that are used in digital computer processes and similar digital computer binary coded digital soft-wired and hard-wired gated hardware that define this programmable gated hardware. In addition US 6,496,969 in the cited art defines the programmable-gated array and FPGA in figure 9 and defines hardware gates with

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shapes. Therefore it is not clear for purpose of examination just what is the correct definition for the term "amorphous" or "shapeless gate".

For purpose of examination the examiner will use the limitation terms of "amorphous hardware gate" to include the programmable-gated array and to include a number of programmable hardware elements as defined in the specifications. Clear clarification for the term "amorphous hardware gate" is required and appropriate correction is required.

3. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

4. The disclosure is objected to because of the following informalities:

I. In the detailed description of the invention of the instant application in paragraph 0034 on page 9 the applicant attempts to incorporate by reference a plurality of various publications applicable to details of Kirchhoff algorithms and finite wave equation algorithms that is improper under 37 CFR 1.57 (f). Correction is required to include the portion of the required Kirchhoff equations and algorithms as claimed in the additional details that are applicable to these cited algorithms as found in the various improperly cited publications. Appropriate correction is required.

5. The disclosure is objected to because of the following informalities:

I. In the detailed description of the invention of the instant application in lines 1—7 on page 22 the applicant attempts to incorporate by reference a plurality of various publications applicable to details of Kirchhoff migration anti aliases Kirchhoff 3-D migration that is improper under 37 CFR 1.57 (f). Correction is required to include the portion of the required Kirchhoff equations and algorithms as claimed in the additional details that are applicable to these cited algorithms as found in the various improperly cited publications into the specification. Appropriate correction is required.

6. The disclosure is objected to because of the following informalities:

I. In the detailed description of the invention of the instant application in lines 1—7 on page 22 the applicant attempts to incorporate by reference a plurality of various publications applicable to details of Kirchhoff migration anti-aliased Kirchhoff 3-D migration that is improper under 37 CFR 1.57 (f). Correction is required to include the portion of the required Kirchhoff equations and algorithms as claimed in the additional details that are applicable to these cited algorithms as found in the various improperly cited publications into the specification. No new matter may be added. Appropriate correction is required.

7. The disclosure is objected to because of the following informalities:

I. In the detailed description of the invention of the instant application in lines 17-21 on page 27 the applicant attempts to incorporate by reference a publication applicable to the details of example code obtained from publication by Claerbout using the set of simultaneous equations with boundary conditions to form a triangle matrix that

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is clearly prior art in a prior art publication and is improper under 37 CFR 1.57 (f).

Correction is required to include the portion of the required equations and algorithms as claimed in the additional details that are applicable to these cited algorithms as found in the various improperly cited publication into the specification. No new matter may be added. Appropriate correction is required.

Prior Art

8. The prior art made of record and not relied upon is considered pertinent to applicant:

I. Stolfo US 4,843,540 in class 712/011 is cited for the parallel data processing system formed as a binary tree of data processing elements 20 in figure 1 and provides a data processing system comprising a binary tree of data processing elements with each element including a processing element with T and R data ports to receive and send data from adjacent data processing elements in lines 25-50 of column 1.

II. Feng et al., US 6,496,969 in class 716/012 is cited for the programming of programmable logic devices and data elements using hidden switches PLD and FPGA and discloses logic elements 400 in figure 4 and teaches computer programming tools to process data and generate displays in lines 1-55 of column 1 and column 2.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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10. Claims 1-2, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Slizynski et al., in US 6,057,679.

With regard to claim 1, Slizynski et al., discloses an amorphous computing system for computing digital data containing the amorphous hardware element. He further discloses the amorphous logic 30 such as the programmable gate array and the programmable logic arrays controlled by the host computers 22 using the bus interface circuits 32 and the digital resources 40 that include the programmable computer and the programmable and dedicated purpose digital filters with the associated circuits that are common in the art see lines 25-40 of column 5. He further teaches fast digital data processing from other digital resources 40 and teaches data analysis that can be preformed in real time as the data is acquired in lines 14-20 of column 5. He discloses the analog signals processing with processing signals representative of the time varying magnitude using the Fourier analysis to determine the frequency components in lines 40-50 in column 1 combined with the adaptable digital data resources that are available from the other sources 40. Although he does not specifically cite computing seismic images, He does cite computing digital computer analog data using the programmable logic controlled the resources 40 and further discloses the system hardware as required by the claim limitations.

Slizynski et al., further discloses the limitations of,

a. "A first amorphous hardware element 30" the amorphous logic circuit 30 in figure 1. And,

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b. Further discloses the limitation of "a computer processor 22 communicably coupled to the amorphous hardware element 30 and to a computer readable medium 40 wherein the computer readable medium 36 includes instruction executable 40 by the computer processor 22" in figure 1. And,

c. Further discloses the limitation of "a first plurality of hardware gates 20 associated with the amorphous hardware element 30 to form a first pipeline 28 wherein the first processing pipeline 28 is operable to update a first data point 36" in figure 1 with the position that analog signal data comprises a first digital seismic data point in community of computer digital data processes. And,

d. Further discloses the limitation of "a second plurality of hardware gates 20 associated with the amorphous hardware element 30 to form a second pipeline 28 wherein the second processing pipeline 28 is operable to update a first data point 36" in figure 1 with the position that analog signal data comprises a first digital seismic data point in community of computer digital data processes.

As to claim 2, Which stand rejected on a rejected base claim, Weirich et al., further discloses the limitations of the computer readable medium 36 with the host computers 22 using the bus interface circuits 32 and the digital resources 40 that include the programmable computer and the programmable and dedicated programmable purpose digital filters with the associated circuits programmable for high frequency or adaptable sequential pass band characteristic depending on the program software see lines 25-40 of column 5.

As to claim 6, which stand rejected on a rejected base claim, Slizynski et al., further discloses the limitation of "the amorphous hardware 30 comprises a field programmable array 30 wherein the computer processor comprises a reduced instruction set computer processor 22" in figure 1.

Claim Objections

11. Claim 3 is objected to as being dependent upon the rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims and to include the system steps as found in claim 3 with the rejected limitations of the independent base claim 1.

12. Claim 4 is objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims with the rejected limitations of the independent base claim 1.

13. Claim 5 is objected to as being dependent upon a rejected base claim 1, but would be allowable if rewritten in independent form including all of the limitations of the base claim 1 and any intervening claims with the rejected limitations of the independent base claim 1.

Allowable Subject Matter

14. Claims 20 and 21-28 are allowed.

15. The following is a statement of reasons for the indication of allowable subject matter: The cited claim limitations found in independent claims 20 and 21 and citing a system for implementing a Kirchoff algorithm using the FPGA and a computer

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processes to implement a first velocity function combined with the steps to implement a second function by utilizing the seismic velocity with computer processes steps to implement a first and second function using a third function of time and the forth function used to filter a plurality of seismic data sample numbers combined with the steps for the fifth function and the steps for the second six Kirchoff functions combined with the steps to compute the second velocity function to update a first and second data pipeline in the FDGA with the first and second seismic image points is not found in the cited art of record..

It is these limitations expressed in each of these claims and not found, taught, or suggested in the prior art of record, that makes claim 1 allowable over the prior art.

Claims 22-39 which are dependent on the allowed independent claim 1 are allowed at least for the reason cited above.

Conclusion


16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J. Taylor whose telephone number is 571-272-2281. The examiner can normally be reached on 8:00 to 5:30 PM.

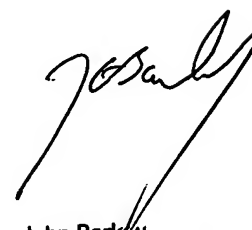
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571-272-2863. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VJ Taylor


31 January 2005.


John Barlow
Supervisory Patent Examiner
Technology Center 2800